

THE DROUGHT OF 1910 IN THE PRINCIPAL SPRING-WHEAT GROWING STATES.

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The year 1910, as a whole, and considering the entire country, was marked by an unusual deficiency in precipitation. Save in small portions of the lower Ohio and middle Mississippi Valleys and over a few small areas in other widely scattered districts, the total fall for the year, including rain and melted snow, was everywhere less than the normal, and in large areas the deficiency was greater than ever before known.

One of the districts most persistently dry, and especially so during the principal period of crop growth, was the great spring-wheat region, including the entire State of North Dakota and large parts of Minnesota, Wisconsin, northern Iowa, northern Nebraska, South Dakota, eastern Montana, and the adjoining portions of the Canadian northwest.

Over much of this region the precipitation did not equal 50 per cent of the usual annual fall, and the deficiency during the period of spring-wheat growth was even greater in proportion.

Fortunately, the latter part of 1909 was comparatively wet with a general excess of snow over much of the district, which accumulated to an unusual depth as the winter advanced, remaining on the ground largely unmelted until the end of the first decade of March.

As a result of this snow covering the ground was not deeply frozen at any period of the winter and there was probably little or no frost in the ground when the snow finally melted, enabling the accumulated moisture of the winter months to readily enter the soil under the most favorable conditions.

The unusually warm weather during March and the first half of April enabled the early completion of the spring seeding, and the heavy snows during the latter half of April added still further, and in the most favorable manner, to the moisture content of both the surface and subsoil. It is reported further that the severe cold of the latter part of April while detrimental to the small grains, destroyed many of the weeds common to the wheat and oats fields of that region, which had been unduly advanced in growth by the warm weather preceding, thereby conserving for the use of the grain crops more than the usual amount of the moisture of the subsoil.

Beginning with February, and in some localities even in January, there was a continued deficiency in the monthly amounts of precipitation which persisted in some localities throughout the entire year and resulted in one of the driest seasons, on the average, in the recorded history of that district.

In North Dakota and to a less degree in portions of the surrounding States the need of more moisture began to be seriously felt in May, although the cool weather prevailing during the greater part of that month prevented excessive evaporation from the soil, and the lack of rainfall was not so severely felt as would have been the case had normal or higher temperatures prevailed.

Cold weather continued in this district during the first half of June and with general lack of moisture but little vegetable growth was possible. Beginning near the mid-

dle of June there was a change to abnormally warm weather, which continued without material interruption till the early part of July. The intense heat with continued lack of rain and the frequent occurrence of drying winds during this period were the culmination of a series of adverse weather conditions which had prevailed previously during the season.

The cold weather during the early part of the growing season had materially affected all vegetation, and its vitality was generally thought insufficient to successfully withstand the intense heat and lack of moisture during the final weeks of growth and maturity.

Hot dry weather continued with occasional light showers throughout the remainder of the season of principal crop growth, and in parts of the district the yield of the principal staples was reduced to the lowest point in their agricultural history.

Despite the enormous deficiency in the season's rainfall, the unusual cold of the early part of the season, and the abnormal heat of the close, only the State of North Dakota as a whole suffered marked diminution in the average yield of the staple crops.

According to the tables furnished by the Bureau of Statistics, United States Department of Agriculture, the yield of spring wheat in North Dakota was but 5 bushels per acre, whereas the average yield for the period 1890 to 1908, inclusive, is 13.7 bushels.

Large sections in the adjoining States suffered also, but good yields in other portions brought the average up to near the normal.

In the production of flaxseed the average for North Dakota was but 3.6 bushels per acre, barely one-third that of the preceding year, and South Dakota and Minnesota also showed marked deficiencies. The total production of this staple in 1910 for the entire United States was but little more than one-half the usual amount, the price increasing from an average of \$1.05 per bushel for the eight years 1902 to 1909, inclusive, to an average of \$2.31 in 1910.

Oats, barley, and other small grains were likewise injured, the average yield per acre of oats for North Dakota being but 7 bushels, the lowest average in the history of the State, while barley yielded but 5 bushels. Other farm products of nearly all kinds showed similar reductions and especially the forage crops.

Throughout the region of greatest crop failure there were occasional fields or even considerable areas with fair crops as the result of timely local rains or improved methods of culture. The advantages of the latter are clearly set forth in the following notes from the Weather Bureau observers at points in that region:

The observer at Havre, Mont., reports as follows:

With others I visited the agricultural experiment farm at Chester, Mont., last summer. This farm consists of 40 acres on which wheat, oats, barley, etc., had been grown during the season under the scientific farming system, or what is generally known as the "dry farming system," and while no more rain fell at Chester than at Havre this 40-acre patch located on the high bench land looked like an oasis in the desert; all around it dry, parched, barren conditions prevailed in the vegetative line. This whole 40 acres looked green and luxuriant.

The observer at Moorhead, Minn., states:

During the past season some exceptionally good yields of wheat were reported, but they were generally from fields that had grown a cultivated crop the previous year or had been summer fallowed, thereby having the largest quantity of water stored from the rainfall of 1909.

The observer at Duluth, Minn., states:

While the drought of the growing season of 1910 was the most severe in 40 years, the results clearly proved locally that those who cultivated their crops more or less assiduously obtained very satisfactory, or at least almost normal, yields.

On the other hand, there were thousands of acres of grain too short to harvest and other thousands that were plowed under or cut for feed.

In addition to the crop loss on account of lack of rain, the water supply was correspondingly low, water transportation was carried on under great difficulties and entirely suspended in many localities, and much inconvenience was experienced by the farmers in obtaining a supply for stock and other purposes.

There have been other droughts of considerable severity in this region, but for length of time during which precipitation continued so largely deficient, and the enormous extent of the deficiency, the past year far exceeded any previous record in the history of a large part of the section under discussion.

The following charts and diagrams indicate the distribution of the rainfall for the several months of the year in the district and a comparison with the average fall. Figure 1 shows the outline of the district, upon which have been placed the figures showing the departure of the precipitation from the normal, while figure 2 shows graphically the relation between the average fall for the respective months, determined from long records and for several stations in the vicinity, and the actual fall for the section, obtained also from the same set of stations.

An examination of the charts shows that the area of greatest deficiency in precipitation does not coincide identically with the area of greatest loss to crops.

In central and eastern Minnesota, where the rainfall deficiency was greatest, a good crop of wheat was grown and other crops made fair returns, whereas in North

Dakota, while the deficiency in precipitation on the whole was not nearly so great, crops were to a large extent nearly total failures. This was due in some measure to the fact that there is normally considerably more rainfall in the eastern portion of the district than in the western, so that while the deficiency was greater, the actual rainfall was still sufficient for fair crop growth.

The prime cause of the severe crop failure in North Dakota was probably due to the intense heat over the latter State from about the middle to near the end of June. At numerous points in that State and also in western Minnesota the temperature for this period was unprecedented. Day after day a withering heat of 90° to 100° or more sapped the moisture from ground and plant alike, fairly burning vegetation in the field and rendering plant growth almost impossible. Experienced farmers have stated that had normal temperatures been experienced during this critical period fair crops would have been harvested despite the deficient rainfall. Over the more eastern and southern portions of the district high temperatures were less persistent and the damage to crops was not so great.

It is frequently stated that after a year or other period of drought and short crops, heavy crops may be expected to follow, and farmers having this in mind, and desiring to recoup from the losses of a dry year, frequently plant more extensively in years following drought than otherwise.

In general, it may be said that the seasons tend to return to normal conditions, and since abnormal weather is the exception it is safe to assume that as a rule climatic conditions following a drought will in the main be favorable for crop production, and good harvests can usually be looked for. This is brought about in part, however, by the better condition of the soil made possible by the occurrence of the drought, especially in the region under discussion. If crops are largely left unharvested, as is the case in the seasons of drought, a large acreage is generally summer fallowed, thereby preventing weed growth and putting the soil in the best condition to receive and conserve the moisture falling during the fall and winter for use of plant growth during the following season.

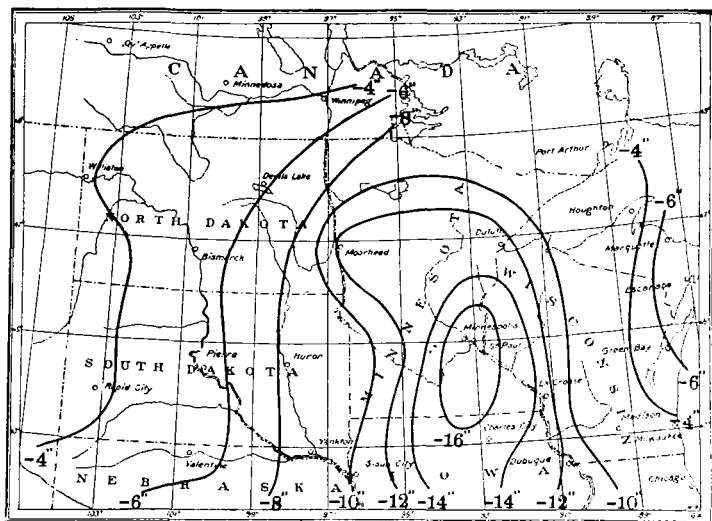


FIG. 1.

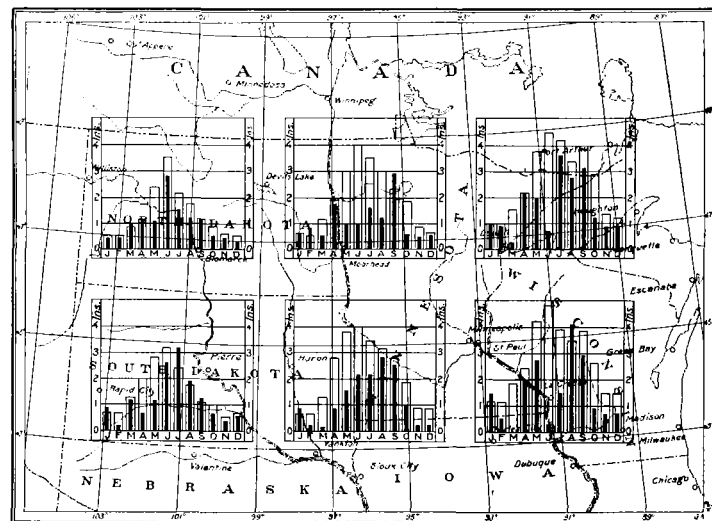


FIG. 2.